Newsletter

National Park Service
U.S. Department of the Interior

The Klamath Kaleidoscope

Transitions in the Klamath Network

The last year has seen major changes in the Klamath Network, from turnover in core staff to shifts in our daily activities.

Changing Faces. The face of the program changed as several core staff members moved on to new positions and new faces arrived to replace them. Bob Truitt left the Klamath Network in fall 2005 to serve as the Data Manager for the Mojave Network, based out of Boulder City, Nevada. Sean Mohren came across the Rogue Valley from the Bureau of Land Management in Medford, to serve as Klamath Data Manager. Andrew Duff, who ably wore the dual hats of Wildlife Ecologist and GIS Specialist for the Network, took a position with the Washington Department of Fish and Wildlife in summer 2006. Chris Zanger was hired in November 2006 as the new GIS Specialist (see sidebar on page 2). Elizabeth Perry will be transitioning this spring from her role as a Data Miner in Lassen and Whiskeytown to a Program Assistant in Ashland. We also expect to hire an Aquatic Ecologist later this year. Stay tuned!

Three former Klamath Network employees have moved on to graduate studies, all in the Klamath Network parks, so you may see them while out and about. Sean Smith, former leader of the Botany and Data Mining Teams, is working on the final year of his graduate degree in Environmental Education at Southern Oregon University, which will culminate in a published flora of Lava Beds National Monument. Cheryl Bartlett, our Wetland Botanist, is in the second year of her master's program working on a wetland vegetation classification of Lassen and Crater Lake National Parks with Dr. Mark Wilson of Southern Oregon University. Sarah McCullough, former Klamath Network Program Assistant and Lassen Volcanic Biotech, began graduate studies at University of California, Davis exploring the status of aspen communities in Crater Lake and Lassen Volcanic. It is great to see talented people advance their careers and help teach us more about our parks!

Changing Activities. Our day-to-day activities are changing noticeably as well. The last three years primarily involved baseline field inventories and summaries of existing information through certification of park species lists and data mining. The start-up monitoring activities also involved detailed summary of background information, development of conceptual models, and scoping of issues and vital signs.

Once our vital signs were selected, we

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The National Park Service has implemented natural resource inventory and monitoring on a servicewide basis to ensure all park units possess the resource information needed for effective, science-based managerial decision-making, and resource protection.

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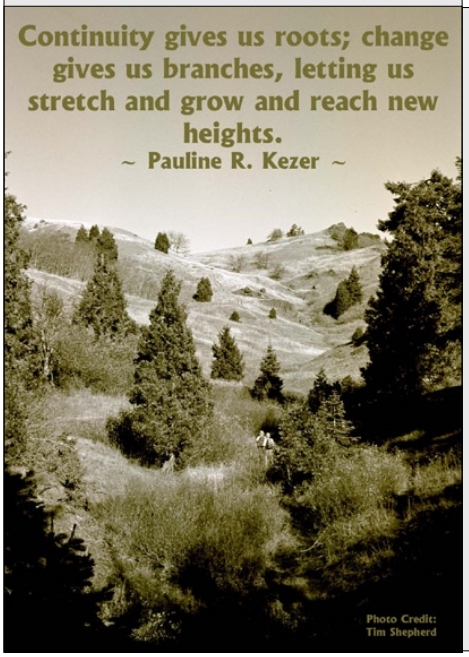
Mailing List
Please pass this newsletter on to all who are interested. To be added or removed from the mailing list, please contact Daniel_Sarr@nps.gov.

The National Park Service cares for the special places saved by the American people so that all may experience our heritage.



Transitions (continued from title page...)

began building a long-term monitoring program. With the development and submission of the Draft Vital Signs Monitoring Plan in December 2006, the Klamath Network is well on the way to program implementation. The Monitoring Plan addresses data collection, management, analysis, and protocol development summaries for each vital sign, as well as various aspects of program administration, including brief staffing and budget plans. A summary of the approved monitoring plan will be presented in the next issue of the Kaleidoscope. Once the plan is accepted, our emphasis will shift to completion of detailed protocols for each of the Network's vital signs. Each protocol and database will be prepared following NPS guidelines and peer reviewed before implementation.

Changing Focus. As a scientific program matures, it is natural that its focus expands from largely collecting information to sharing new and interesting findings. The Klamath Network is already moving in that direction, which is also a goal of the I&M Program as a whole. Through our monthly Featured Creature articles, seasonal Kaleidoscope Newsletter, and the Strategic Interpretive Plan, we are making greater efforts to share and inform. Under the Interpretive Plan, the Network has partnered with Southern Oregon University to develop interpretive materials on selected topics, including biodiversity, invasive species, climate change, water quality, and wetlands. Graduate student Deb Zierten's work with biodiversity was showcased in the last Kaleidoscope. This year, Mitch Daniel was selected to undertake a project that communicates important issues surrounding invasive species in park environments. In April 2007, the I&M Program will hold a National Parks Day at the ScienceWorks Museum in Ashland, which will highlight interactive learning opportunities in the parks and feature a presentation by Kathy Jope on "Climate Change and the National Parks."

New faces, new plans, and a growing emphasis on communication are some of the latest changes at the Klamath Network. Through our activities and this newsletter, we are excited to share in the science, teaching, and outreach mission of the National Park Service.

Enjoy!

Daniel Sarr, Ph.D., Klamath Network Monitoring Coordinator

Please welcome Chris Zanger, the Klamath Network's new GIS Specialist!

Chris Zanger joined the Network in November 2006. A self-proclaimed "Map Geek;" he received his M.S. in GIScience from Oregon State University; taught GIS courses to public and private institutions; and worked in GIS for the BLM, Nature Conservancy, Juniper GIS, and Spatial Solutions. Chris has a strong interest in sharing his knowledge and enthusiasm for GIS; he will also be teaching courses in GIS at Southern Oregon University.

Intertidal Protocol Development at Redwood

By Karah Cox and Dr. Pete Raimondi, UC Santa Cruz

Photo by David Lohse

Redwood National and State Park's (RNSP) intertidal monitoring program was initiated in 2004 as a Klamath Inventory and Monitoring Network project. Each summer and winter, key rocky intertidal species are sampled at three sites in RNSP using a variety of established methods. Mussels, seastars, surfgrass, acorn barnacles, and several algal species, such as rockweed and turfweed, are among the key species monitored. Monitoring intertidal assemblages allows changes to be tracked within and among communities over seasonal and yearly time scales. Tracking changes in these communities allows determination of "normal" limits of variation, as well as seasonal and long-term patterns. Understanding these patterns is necessary for detecting anthropogenic changes resulting from disturbances, such as oil spills, and is critical for making informed management decisions.

Flora and fauna of the intertidal. Species include Pisaster ochraceous (sea star), Anthopleura xanthogrammica (anemone), Tegula funebralis (turban snail), crustose corralline and red algae.

Studying the marine resources of RNSP on a larger geographic scale requires a collaborative effort. In order to put the monitoring data from RNSP in a much broader geographical context, this study is conducted with the cooperation of two intertidal monitoring agencies, MARINe (Multi-Agency Rocky Intertidal Network) and PISCO (Partnership for the Interdisciplinary Study of Coastal Oceans). MARINe and PISCO work with many academic and government organizations to conduct intertidal monitoring surveys called Community Dynamics Surveys. Channel Islands and Golden Gate National Park Service Units support this effort, along with over 20 federal, state, and local government agencies; universities; and private organizations. The Community Dynamics Surveys have been used to determine abundance and distribution patterns of intertidal species along the southern California coast since the early 1990s. The range of these surveys has been expanding to include over 80 sites spanning the California and Oregon coastline. The addition of sites within Redwood National and State Parks fills a noticeable gap in the geographic coverage of existing community surveys. The focus of these surveys is to examine temporal changes within permanent study plots. We have adapted the protocols used in these surveys for monitoring intertidal organisms within Redwood National and State Parks. This allows coast-wide comparisons of population dynamics to be made between study sites. For more information on the MARINe network and PISCO please visit http://www.marine.gov and http://cbsurveys.ucsc.edu.

Initial monitoring results from Redwood National and State Parks do not indicate any significant community changes over the two year study period. However, comparisons between current assessments and those made by a 1975 study indicate a strong successional shift from a highly disturbed community to a more stable community. Historically, community differences may be attributed to increased sediment loads and higher quantities of driftwood at rocky intertidal sites. Without monitoring data before and after the years of intense logging, it is not possible to directly assess the impacts of increased sediment loads and driftwood scouring intertidal communities. This highlights the need for continued monitoring. In the possible event that degradation occurs from natural or anthropogenic drivers, long-term monitoring data will enable managers to assess the impacts and determine biological response.

RNSP biologists David Anderson and Cara McGary photographing a barnacle plot at Damnation Creek intertidal site.

Bryophytes of the Deep

By Dr. Steven Jessup, Southern Oregon University

Exciting mysteries and discoveries lie in the depths of Crater Lake.

In 1988, a submarine survey of Crater Lake discovered massive accumulations of mosses, liverworts, and associated biota living in the lake between 25 and 140 meters in depth on the caldera walls and the plateau surrounding Wizard Island. The biota in this community dwarfs all other known biota in the lake in both biomass and diversity. At least ten species of moss, liverwort, and macroscopic algae have been discovered, forming a cryptogamic macrophyte vegetation that accumulates in mats many meters thick in places. The mats are home to a diverse community of invertebrates, protists, and microalgae. Judging from the size

Fragments of moss stems and leaves comprising the fibrous matrix of the ancient mats. Note mm rule at right margin.

of the standing biomass in the system, the mat community is likely a critical link in nutrient cycles between terrestrial, benthic, and open-water components of the lake ecosystem. Discovery of such a major ecosystem component adds new value to the resource the park protects.

The benthic mats were explored in 2006 by a team from Crater Lake National Park, US Geological Survey, Oregon State University, Southern Oregon University, Glen Canyon Dam National Recreation Area, and Biosonics Inc. The expedition captured lake floor video via towed sled, covering over 23 km of line transects, and video of ascents made on submerged caldera walls with a remotely operated vehicle. The expedition also included hand-held video and sample collection via scuba inside of the ancient mat collapse areas. The outcome of that expedition will be a much improved view of the Crater Lake benthos, including estimates of mat thicknesses and biomass based on new hydroacoustic data. The program also produced an interactive public exhibit in Sinnott Memorial Overlook during the field expedition, to interpret the ongoing research on the lake and mats.

Two bryophyte mat types are prominent in Crater Lake: 1. Sediment-impacted Leptodictyum mats forming deep apparently ancient deposits exhibiting curious collapse features. 2. Verdant Drepanocladus mats supporting luxuriant periphyton formations. Both bryophyte mat types are abundant in the benthos between 20 and 60 meters. Video from 2006 of the benthos along the transect reveals the diversity of benthic community composition involving moss, periphyton, microbial mat, and sediment dynamics.

Several conclusions can be drawn from early observations of the video:

1. Verdant Drepanocladus mats dominate the benthos over large areas of the Wizard Platform.

2. Periphyton on Drepanocladus mats form long ridges where moss growth leaders are most vigorous.

3. Moss growth below 60 meters is sparse and generally occurs on and in microbial mats with associated algae.

4. Some areas of the bottom appear to have heavy rates of detrital rain, visible in much of the video footage.

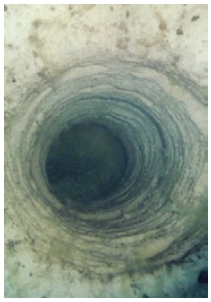
5. Moss beds are heavily impacted by detrital rain in some areas.

6. Raised mounds with lobed margins and collapse features found along transects are identified as ancient Leptodictyum mats.

7. Verdant Drepanocladus mats are overgrowing the ancient Leptodictyum mats.

Bryophytes of the Deep (continued from page 4...)

Ancient Leptodictyum mats contain holes varying in size from approximately 10 cm to 10 meters in diameter. Holes form vertically in the ancient mat to a depth of many meters. Large collape areas in the ancient mat are marked by swarms of holes in convoluted depression fields. It is unknown how the collapse areas form. Anaerobic decomposition of the fibrous support network of moss stems and sediments probably reduces the mat's structural integrity, then stress points collapse under the settling overburden of accumulated sediments, avalanche debris, and biomass. As far as we know, these aquatic bryophyte mat accumulations and benthic geomorphological features are unique to Crater Lake.



20 cm diameter hole in ancient mat. Photo by Robert W. Reynolds.

The slopes of collapse areas show obvious bedding features in places. These ancient senescent mats are clearly stratified. If strata in the mats can be calibrated to annual and/or periodic nutrient regeneration events in the lake ecosystem, we may reconstruct a detailed history of the lake ecosystem as recorded in the paleobenthos. Analysis of the sediments within the moss matrix will possibly reveal a very unique high resolution record of the lake's early biogeochemistry.

Approximately one meter vertical exposure in large collapse feature. Note the clear lamination of bedding layers in the sediment. Photo by Robert W. Reynolds.

With the help of funding from the Crater Lake Natural History Association, the team will be back at the lake in 2007, attempting to obtain cores of the ancient mats for paleolimnological analyses.

Donna Morrison removing sample of Drepanocladus from camera sled after collision with mat during one of the transects. Donna is a graduate student at SOU working with Steven Jessup on the project.

Principle Participants in the Deep Moss Research Team:

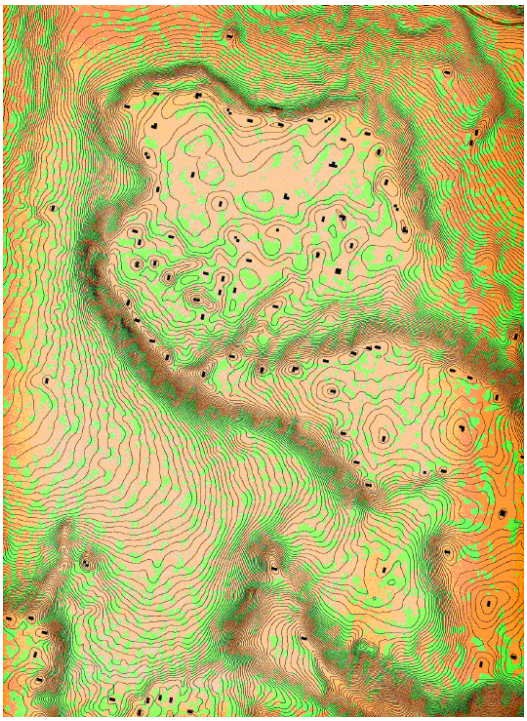
Collier, Robert, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR

Buktenica, Mark, Crater Lake National Park

Girdner, Scott, Crater Lake National Park

Dartnell, Peter, U.S. Geological Survey, Menlo Park, CA

Jessup, Steven, Department of Biology, Southern Oregon University, Ashland, OR.



Hydroacoustic backscatter bathemetry, 400X800 (approx) quad, Governors Bay. Black dots indicate distinct holes in the ancient moss mat.

Wetland Inventory at Crater Lake and Lassen

By Cheryl Bartlett, Oregon State University

In the Klamath Network Parks, wetlands are among the most ecologically important habitats, and include areas as diverse as montane meadows, marshy lakeshores, alder covered slopes, and riparian forests. In addition to being biodiversity hotspots, they also provide vital food and habitat for many species, including some rare and unusual ones. Wetlands typically support a disproportionately large number of species when compared to the overall landscape. They also perform essential functions such as water storage and carbon sequestration. For these reasons, it is important to have a vivid picture of what wetland types are present, how common each type is, where they are located, and their current ecological health.

A sundew (Drosera rotundifolia), one of several species of carnivorous plants that can be found growing in Crater Lake's wetlands. Photo by Cheryl Bartlett.

Researchers from Oregon State University, in partnership with the Klamath Network, completed a second season of wetland surveys during the summer of 2006. These surveys inventoried the wetlands of Crater Lake and Lassen Volcanic National Parks; the collected data is being used for two separate but closely related projects.

The first project is a functional assessment, which will provide information on the health of individual wetlands and the ecological role that particular wetland types play. This information can be used in the decision-making process regarding how to best manage the parks' wetland resources. For example, information collected regarding the presence of non-native species may be used to prioritize eradication efforts and target areas vulnerable to infestation.

The second project will result in a community classification and vegetation map of the wetlands in Lassen and Crater Lake, complementing current efforts to classify and map upland vegetation. These parks include some of the most pristine habitat remaining in the mid to high elevation regions of the southern Cascades. As such, they represent an ideal study site for classifying the region's natural wetland communities. The community classification will describe the vegetation composition and structure of the wetland plant communities. It will do this by documenting what species of plants typically occur, their abundance, and their physical environment. Currently, the only resource available that is specifically targeted towards wetland classification is the National Wetland Inventory (NWI) map series generated by the Fish and Wildlife Service. These maps have proven useful to resource managers as a readily accessible information source on wetland location and distribution in the parks. However, the maps' utility is somewhat limited because the classification used does not include a detailed floristic characterization. The current effort to classify the wetlands of these two parks will fill a knowledge gap and provide a much clearer picture of the biological characteristics associated with specific wetland types. This becomes particularly relevant when considering the best management practices for wetland habitats that may support rare or threatened species, such as the Cascade frog, a species dangerously close to extirpation from Lassen Volcanic. Understanding the characteristics, distribution, and extent of wetland community types that may support these species of concern will greatly enhance sound decision-making on how to manage potential habitat.

So far, two field seasons have been dedicated to this project, and a third and final season is scheduled for this summer at Lassen. Data collection finished at Crater Lake during the summer of 2006, with some exciting preliminary results. A total of 102 plots were completed at 76 wetlands. Comprehensive species lists were compiled for each plot, and species present in the wetland but not in the plot

Josh Barraza, a member of the 2006 wetlands crew at Crater Lake and undergraduate at UC Riverside, in a particularly complex wetland. Wetlands with extremely heterogeneous vegetation such as this one often provide excellent wildlife habitat. Photo by Cheryl Bartlett.

Wetland Inventory at Crater Lake and Lassen (continued from page 6...)

A Cascades frog near Boundary Springs in Crater Lake. This frog is common at Crater Lake, but has all but disappeared from Lassen Volcanic, where it was once common. Photo by Cheryl Bartlett.

were also recorded. This resulted in over 3,800 individual observations of wetland plant species at Crater Lake, including rare plants and at least 15 species previously unknown at the park. Included in this list of new species are two plants, a club-moss (*Lycopodium sitchense*) and a water starwort (*Callitriche verna*), which represent two entirely new families in the park's flora. Data analysis is currently underway; the community classification and a draft map of the Crater Lake wetlands are expected to be complete by late spring of 2007. The functional assessment will also be completed over the next few months.

This club-moss (Lycopodium sitchense) is one of several plants added to the Crater Lake flora as a result of this year's wetland surveys. Not only is it a new species for the park, but it also represents a whole new family. Photo by Kier Morse.

Australian Scientist Visits the Klamath Network

By Daniel Sarr, Klamath Network

Dr. Grant Wardell-Johnson

Dr. Grant Wardell-Johnson, a Senior Lecturer at the School of Natural and Rural Systems Management-University of Queensland, Australia, visited the Klamath Network in November 2006 while on a tour of the "wet mediterranean vegetation" of Oregon and northwest California. He was on a reconnaissance mission in anticipation of more detailed floristic studies in our region in 2007. Dr. Wardell-Johnson, who is studying "wet mediterranean vegetation" around the world, has conducted extensive research in sustainable resource management and conservation biology.

Dr. Wardell-Johnson's interest in wet mediterranean vegetation stems from his study of the forests and woodlands of Southwest Australia. That region, with ancient, infertile soils and a mediterranean (winter wet, summer dry) climate, is a global hotspot for floristic biodiversity, exceeded in temperate zone richness only by the Cape Floristic Kingdom of South Africa. At the southwest tip of Australia, where Southern Ocean gales augment yearly rainfall, heathlands and shrublands give way to magnificent Jarrah-Karri forests. The giant Karri tree (Eucalyptus diversicolor), which can exceed 90 m (300 feet) in height, is Southwest Australia's answer to the redwood, but with a twist. It is a flowering plant (angiosperm) whose flowers are pollinated by the lovely purple-crowned lorikeet (Glossopsitta porphyrocephala). Dr. Wardell-Johnson's research has explored the unique biodiversity at the wet edge of the Southwest Australia.

Karri forest in its native habitat, Southwest Australia. Trees look familiar? They're also known as eucalyptus! Inset: purple-crowned lorikeet.

Jennifer Gibson, Daniel Sarr, and Sean Mohren had the pleasure to take Dr. Wardell-Johnson on a tour of Whiskeytown National Recreation Area, where he was duly impressed by the forest and chaparral diversity at Whiskeytown, known affectionately as the "Whiskeytown mix" (see Gibson's article on Whiskeytown's Botany Blitz in this newsletter). He also toured Redwood and Lassen Volcanic National Parks during his visit and was hosted by Dr. David Hibbs of Oregon State University. See you in the parks this summer, mate!

Whiskeytown's Botany Blitz of the Top of Shasta Bally

By Jennifer Gibson, Whiskeytown NRA

Most people have heard of the California Gold Rush and the Central Valley water projects that define Whiskeytown National Recreation Area's cultural history, but few are aware of the natural treasures this park has to offer. Whiskeytown is located within the Klamath Mountain physiographic province and is an area of significant diversity due to proximity to the Cascade Range, Coast Range, and Sacramento Valley. Its diverse plant communities intergrade with one another in such a way that distinct boundaries are seldom observed. This patchy vegetation pattern reflects a broad range in elevation, rugged topography, diverse soil types, and history of natural and human disturbance. The mixing has created unusual combinations of taxa – with such species as Western whiptail lizards, chamise, and whiteleaf manzanita growing adjacent to species that represent the cooler Pacific Northwest, such as tailed frogs, Pacific yew trees, and Pacific giant salamanders.

The landscape at Whiskeytown is dominated by Shasta Bally, a 6,200 foot batholith of decomposed granite that captures the Klamath Mountains before they descend down to the floor of the Sacramento Valley. Shasta Bally is unique because of its geographic location, isolation, and sandy granitic soils. In an effort to develop a comprehensive list of the plants of Shasta Bally, Whiskeytown organized a botany blitz. This was an intensive single effort in which people familiar with plant species in the area sought out botanical treasures, such as new locations of rare plants and new plant species for the park. Blitzers consisted of volunteers from Point Reyes National Seashore, Oregon Caves National Monument, Lassen Volcanic National Park, and the local chapter of the California Native Plant Society. In two half-day sessions, participants fanned out across a few select areas and discovered over ten species new to the park. One newly found species could be considered rare by the State of California; park staff are awaiting further verification. While looking for new species to add to the plant list, botany blitzers had their eyes pealed for a glimpse of the glamorous clustered lady's slipper, Cypripedium fasciculatum, which has been documented in nearby areas of the park.

The Blitzkrieg Group (from left to right, top row: John Roth, Dave Fritchle, Jen Gibson, Barbara Alberti, and Greg Lockett; bottom row: Donna Shorrock and Sarah McCullough). Photo by Jen Gibson.

A botany blitzer (Sarah McCullough) identifying species with French Gulch and Mt. Shasta in the background. Photo by Jen Gibson.

This botanical blitz was timely, in that Whiskeytown has initiated the process of developing an Environmental Assessment of the telecommunications site on the top of Shasta Bally. Alternatives for this Environmental Assessment include: 1) maintaining the telecommunications site as is; 2) phasing out the telecommunications site from the park and removing the road and power lines; and 3) maintaining the site and adding an emphasis on increased recreation. Information gained from this botanical blitz will provide park staff with critical insight on the degree and extent of impact each alternative may have on park resources and how to mitigate for any potential impacts.

Learning about our parks helps us understand how to conserve and protect our park resources. Knowing that a handful of volunteers can discover ten new species in two fun-filled days tells us that there are probably many more species out there to add to the park's list, some of which could be fragile and rare. Whiskeytown would like to sincerely thank those that participated in this event, as it will enable park staff to understand and monitor these populations when stressors such as illegal off-road vehicle use and the long-term threat of global warming continue.

Early Detection of Invasive Plant Species in the Klamath Network

By Susan O'Neil, Klamath Network

Biological Science Technician (Adam Cantrell) estimating percent cover of Scotch Broom infestation at Whiskeytown. Photo by Jeremey Kelley.

Invasive plants have captured the attention of the Klamath Inventory and Monitoring Network (KLMN) as an important issue. The KLMN ranked nonnative species as the top vital sign, as have many other networks. Early detection of invasive species is a top theme in many networks and has proven the most effective way to deal with invasive species – catch them early and save a lot of money and time on control efforts. Two years ago, USGS researchers began pilot research on this topic in KLMN parks. A group of researchers from Utah State University has been collecting data from Lava Beds and creating computer-based predictive models on where certain species may spread. Another team of researchers has been using KLMN park data to develop a system for prioritizing species in three phases: introduction, establishment, and spread. Whiskeytown has been the pilot park for this prioritization; the researchers have met with park specialists to refine the prioritization list and build on local expertise and experience.

Mullein at Spruce Lake, Crater Lake National Park. Photo by Terrestrial Ecology Branch, Crater Lake National Park.

In 2006, Dr. Bradley Welch started working with the previously mentioned researchers and others to develop a handbook for invasive species early detection (ISED) programs. Since many networks are interested in this topic, the goal is to make a comprehensive handbook to assist in everything from the development of monitoring objectives to justifications for ISED to sampling design. The handbook is a collaborative effort between USGS and NPS; many authors thus far have contributed chapters and case studies. It is currently under review and will be available in spring 2007.

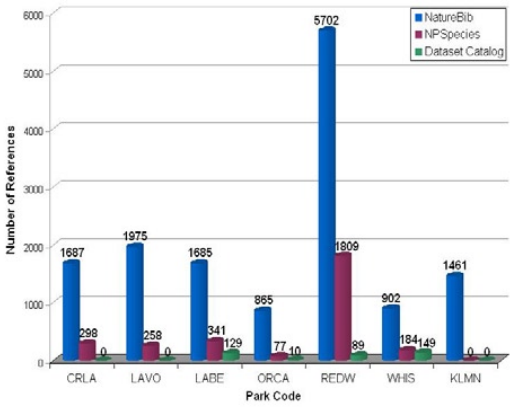
The KLMN allocated funds in FY07 to developing a protocol for invasive plant monitoring. Susan O'Neil started this undertaking, gathering species lists and life histories for the top plant species that may encroach in KLMN parks. Dennis Odion is taking over the protocol development for this vital sign, which will include early detection of invasive plants and the status and trends of existing species. A meeting was held at Redding in January 2007 to discuss this vital sign, determine what parks are already monitoring, present the USGS-NPS handbook, agree on a budget, and start developing objectives and strategies for monitoring. The goal is for inventory and monitoring work to compliment the existing park efforts and provide data that the parks may use for management.

Where the Data Miners Roam

By Elizabeth Perry, Klamath Network

The year of 2006 proved to be exciting for the Klamath Network Data Mining Team (DMT)!

We uncovered hundreds of new documents and datasets and updated information for thousands more (see graph). After finishing Phase I (cataloging hardcopy references about vertebrates and vascular plants in NatureBib and NPSpecies) in 2005, we began Phase II, including protocol development. In Phase II, we have expanded our scope, capturing hardcopy and digital references and datasets related to geography, soils, air, water, climate, all flora, and all fauna. So far, we have completed Phase II at Lava Beds and Whiskeytown and have made significant progress at Redwood and Crater Lake. For Oregon Caves and Lassen Volcanic, expect to see a data miner diligently discovering files in those parks soon!



The total number of references captured by the Klamath Network DMT and park staff as of December 2006.

We are also excited to note that in the process of cataloging park data, "lost" documents have been found and park staff have been able to easily access wanted information. For example, we helped scientists at Redwood rediscover park studies from the 1980s on exotic plant management. We also rediscovered a 1939 journal article concerning 543 species of plants at Crater Lake. At Lava Beds, we found and created metadata for an at-the-time unknown 1936 vegetation map and its original field notes. We have also captured Whiskeytown's extensive water quality datasets from the 1970s to the present. Researchers at Lassen Volcanic were able to use NatureBib to find wanted documents located at other parks.

In 2007, we look forward to wrapping up the DMT effort; developing finished products; and working with the parks, handing over the reins of the cataloging process so that they may utilize and update the databases.

Photo on right: Pacific Coast, near Redwood National and State Parks. By Laura Bridy.

Klamath Network Recent Events and Upcoming Highlights

December 2006 Klamath Network submitted Draft Vitals Signs Monitoring Plan, Water Quality Monitoring Plan, and Data Management Plan

January 2007 KLMN Invasive Species Monitoring Meeting

January 2007 Mitch Daniel selected as KLMN Outreach Research Assistant at Southern Oregon University

April 2007 National I&M Meeting

April 28, 2007 National Parks Day at ScienceWorks Museum in Ashland, Oregon

April-June 2007 Drs. Michael Barbour and Aysik Solomesch conduct vegetation classification for Lassen Volcanic National Park

May 2007 Klamath Network submits draft Aquatic Communities, Landbirds, and Intertidal Monitoring Protocols

June 2007 Planning begins for vegetation mapping at Crater Lake, Lava Beds, and Oregon Caves.

September 2007 Klamath Network submits final Vital Signs Monitoring Plan

December 2007 Klamath Network Board of Directors Meeting